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Andreas Stephan • Andriy Tsapin

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DIW Berlin
German Institute for Economic Research
Mohrenstr. 58
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Tel. +49 (30) 897 89-0
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Persistence and Determinants of Firm Profit in Emerging Markets

Andreas Stephan*, Andriy Tsapin†

October 15, 2008

Abstract

The paper studies the persistence of profit and its determinants in emerging markets. We apply Markov chain analysis, dynamic panel GMM estimation, and quantile regression techniques to a panel of approximately 3,000 Ukrainian companies. The empirical results show a moderate level of profit persistence, as well as a relatively low speed of adjustment to the steady-state profit level, thus providing no support for the hypothesis that there is a lower persistence of profits in emerging markets due to more intense competition. Regarding the determinants of firm profit in an emerging market economy, the findings from alternative methods reveal that ownership structure and regional location of the firm have a significant impact.

Keywords: Profit, Persistence, Convergence, Markov chain analysis, Ukraine.

JEL Classification Numbers: G32, G30

*Jönköping International Business School, DIW Berlin, CISEG and Centre of Excellence for Science and Innovation Studies (CESIS), Royal Institute of Technology, Stockholm.

†*Corresponding author.* European University Viadrina, Frankfurt (Oder), Germany. E-mail address: atsapin@euv-ffo.de.

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1 Introduction

A basic premise of economic theory is that company profit rates should converge to equality in competitive markets. Empirical studies, however, frequently find that differences in profits across firms tend to persist over time. Moreover, there is considerable variation across countries as to the speed with which firm profits adjust (or reach) their "permanent" values (e.g., Cubbin and Geroski 1987, Waring 1996, Glen and Singh 2004). These differences could be due to the varying strength of anti-trust policies and country-specific regulatory systems (Geroski and Jacquemin 1988). One of the main conclusions of the literature has been that rivalry alone does not erase persistent asymmetries among firms.

The issue of the persistence of profit has been intensively investigated for advanced market economies, but the evidence for emerging market economies is rather scarce, probably due to lack of appropriate micro data. A study of emerging markets by Glen and Singh (2003) finds that both short- and long-term persistence of profitability are lower in these markets compared to advanced markets. The authors conclude from this finding that competition intensity is higher in emerging due to: (i) lower sunk cost to enter markets, (ii) faster growth rates of firms, (iii) weaker role of governmental regulations, and (iv) the existence of many large business groups.

The aim of our study is to present further evidence on the persistence of profit in emerging markets by employing alternative methods in the empirical analysis. In addition, we study the determinants of firm profit as it provides further interesting insights into the differences between emerging and advanced market economies. For example, the process of ownership structure establishment in transition economies is fundamentally different from that observed in more advanced economies.[1] In emerging economies, strong ownership concentration negatively affects firm performance as do underdeveloped capital markets.[2] Accordingly, we provide evidence on the determinants of profit related to the specificities of transition economies. In particular, we study the

[1] See Pivovarsky (2001).

[2] Poorly functioning credit markets may constrain the expansion of companies (Tybout 2000).

role of firms' intangible assets, companies' ownership structure, and firm location play in regard to profitability.

In the empirical analysis we employ three different, but complementary, methods. First, in a novel approach, we use Markov chain analysis for studying the persistence of profit because persistence can be defined as the probability of remaining in the initial profit class. The Markov chain approach has the further advantage of allowing us to investigate the mobility of firms across different profit classes, i.e., their likelihood of switching profit classes. Second, we apply dynamic panel data analysis to assess the speed of adjustment of firm profit. Finally, to study the determinants of profits in emerging markets we use quantile regression techniques, which provide more valuable insights in this context than does the standard linear regression model. The rest of the paper is organized as follows. Section 2 provides a short literature review. Section 3 describes our data. In Section 4, the empirical analysis is performed using the Markov chain approach, dynamic panel data estimation, and quantile regressions. Section 5 sets out our conclusions.

2 Literature Review

Numerous studies present evidence that the average firm's profit comprises both permanent and short-run components, and that short-run shocks converge over time (see, e.g., Mueller 1986). Earlier studies have estimated one rate of persistence of profitability for all firms. To avoid misleading results, Waring (1996) proposes considering a firm's profitability as a combination of a competitive return component, an industry rent component common to all firms in the industry, and a firm-specific rent component.[3]

The traditional structure-conduct-performance paradigm is challenged by more recent research that distinguishes between industry- and firm-specific effects.[4] McGahan (1999) finds that both firm and industry influences are important, stating that (i) organi-

[3]Mueller (1977) argues that firm profit is comprised of a competitive return, a permanent rent component, and a transitory rent component.

[4]The structure-conduct-performance paradigm postulates that certain market attributes, such as market concentration or barriers to entry, influence firm behavior and determine profitability.

zational studies are essential for understanding performance differences in a cross-section analysis and (ii) industry studies allow for understanding performance over time. McGahan (1999) also demonstrates that the industry effects are more predictable for U.S. corporations and have a large permanent component.

The industry view points out the importance of industry-specific indicators, such as market structure, firm concentration, and capital intensity, for explaining profit disparities and persistence. The results of Cubbin and Geroski (1987) suggest that considerable heterogeneities exist within most industries. These authors also find that firms in highly concentrated industries adjust much more slowly toward long-run equilibrium profit rates. Caves and Porter (1977) argue that industry structure has a strong influence on the persistence of firm-specific rents. Some industries have structural characteristics that impede entry and limit rivalry among companies.

The firm persistency view stresses the role of firm characteristics: size, market share, growth, advertising, research and development expenditures, and so forth. Mueller (1990) concludes that entry barriers can be maintained only by sustained innovation. Thus, under the "profit persistence" theory, it is innovation competition, not price competition, that leads to persistent profits. The results of Cefis (1998) confirm that firms that are persistent innovators and earn above-average profits have a high propensity to continue doing both, that is, they continue to innovate and earn above-average profit. However, extra profit due to innovations can be only temporary, vanishing when competitors start to imitate the products or processes of the innovative leading firm. Moreover, Galbreath and Galvin (2008) note that even existing competition can quickly diminish extra returns gained from tangible resources. At the same time, intangible assets are argued to support competitive advantages due to so-called isolating mechanisms that act as barriers to replication of abnormal performance.[5]

Empirical studies frequently demonstrate that a firm's profit rate tends to converge toward its long-run steady state, but that this equilibrium differs across firms, sectors, and countries. Indeed, there is significant variability in the speed with which profits

[5]McGahan and Porter (1999) argue that industry structure hinders the imitation of profitable firm attributes by rivals and new entrants.

adjustment to their firm-specific "permanent" value across different countries. Singh (2003) points out that there are a number of factors in emerging countries that may discourage competition (government-created barriers to entry, segmented markets, etc.). At the same time, however, some structural peculiarities of transition economies make it possible to encourage and intensify competition (lower sunk costs, special role of large conglomerate companies operating in different industries, etc.). Because of these paradoxical possibilities, Glen and Singh (2003) stress that the persistency results for developing countries need very prudent interpretation. They test profitability persistence "in seven leading developing countries" (Brazil, India, Jordan, Korea, Malaysia, Mexico, and Zimbabwe), and conclude that both short- and long-term persistency of corporate profit rates for these seven countries are lower than those for mature economies. This is an unexpected result in that it implies there is a higher level of competition in emerging markets. However, none of the countries examined by Glen and Singh (2003) had experienced a planning economy. Therefore, our study makes a special contribution to this issue as it examines profit persistence in case of an ex-planning economy.

3 Data

The main data source is the SMIDA (State Commission on Securities and Stock Market) database, which is comprised of the balance sheets and income statements of open joint stock Ukrainian companies during 1999–2006. Only economically active firms (i.e., companies with positive sales values) are considered. Our data contain about 30,000 yearly firm observations from around 5,000 firms per year. Combining information on performance and firm-specific characteristics, we end up with a panel of approximately 3,000 firms.[6]

We include the following factors for explaining profits: year, industry, and firm location dummy variables. Time dummies are included so as to capture business cycles. We adopt the regional division of Ukraine into six economic regions for specifying regional

[6]The reliability of estimated transition probabilities in Markov chain analysis requires a sufficiently large number of observations.

dummy variables indicating the regional location of firms. Two-digit industry classification codes are used for specifying industry dummy variables.[7] The data allows us to distinguish three levels of diversification.[8] We define a variable *Divers* that describes the number of business fields in which a company is engaged. This variable takes the value of 0 for companies that specialize in just one area, the value of 1 when a firm operates in two industries, and if more than two industry codes are reported, *Divers* takes a value of 2. We also define two variables to capture the influence of ownership. The first variable, *Owncon*, measures ownership concentration and is given a value of 0 when a firm has a diluted ownership structure; if a person or another firm owns a significant proportion of the company's shares (more than 25 percent), it takes the value of 1. However, since different types of stakeholders might have a different impact on the firm, we use the variable *Owner* to indicate whether the owner is a corporation or an individual (it takes value of 0 or 1, respectively). The list of additional firm-specific applicable characteristics includes the size of company, the firm's leverage and liquidity, and the firm's intangible assets.

We use two measures of profit rate in the analyses: price-cost margin (PCM), which is defined as revenue minus costs relative to revenue, and return on assets (ROA), which is defined as operating profits divided by the assets of the firm. As can be seen from Table 2, firms from highly concentrated industries (e.g., Mining, Metallurgy, and Energy) tend to have a higher average level of PCM but much lower ROA. Interestingly, these same industries also have characteristics that impede entry or limit rivalry among members. Furthermore, firms from these industries are commonly heavily subsidized in Ukraine. Due to anticipated problems with misreporting of company profit, we prefer to use both measures of profit in the analysis. As firms are likely to report downward-biased values of their profit, ROA may be a more inaccurate measure of profit in an emerging economy compared to an advanced one. The price-cost margin is likely to be a more

[7] The CCEA (Classification of the Categories of Economic Activity).

[8] Van Phu et al. (2004) investigate the performance of German firms in the business-related service sector. They conclude that age and the degree of diversification have a negative impact on firm performance; additionally, credit relations with several banks allow firms with declining sales to improve their situation.

reliable measure for tracking the real performance trends. Hence, in our analysis we use price-cost margin as the key variable.

Table 3 contains some descriptive statistics. Price-cost margin has a mean of about 0.288 during the observed period. The negative value of average ROA (–0.009) demonstrates the tendency of companies to report losses, although the large variation of this variable (0.244) shows a wide range of extremely polar values. The natural logarithm of sales is used as a proxy variable for firm size. We deliberately decided not to use number of employees as a measure of firm size as there is ample evidence about the frequently informal status of workers in transition economies.[9] *Leverage* and *liquidity* are related to the debt literature of capital structure and reflect the financing opportunities of firms (Stephan et al. 2008). Mean leverage is about 34.5 percent of total liabilities. *Liquidity* is defined as the current assets to current liabilities ratio. This variable indicates that there is a considerable range of heterogeneity in regard to companies' cash constraints. The *IntangibleAssets* variable is used to proxy goodwill, which is expected to have a great deal of influence on firm performance. According to accounting standards, "intangible assets" include the value of patents, licenses, copyrights, and so forth. The mean of the intangible assets in total assets is only 0.007 for our sample, but the standard deviation (0.035) reveals notable variation of this variable across firms.

4 Empirical Results

4.1 Persistence of Profit

4.1.1 Markov Chain Approach

Profit persistence studies are typically based on estimation of first-order or second-order autoregressive equations for firm profitability. Tauchen (1986) suggests a discrete-value Markov chain analysis as an alternative procedure to approximate a continuous-valued autoregression. Quah (1993) applies the Markov chain method using transition probabil-

[9] See, for instance Kupets (2006).

ities matrices to investigate how income levels converge across different countries.[10] We use the Markov chain approach in our analysis to explore the convergence and mobility of Ukrainian firm profit rates.

Let y_s^t denote the profit rate of firm s at time t. A discrete-time Markov chain process requires that the following relation

$P\{y_s^{t+1} = j | y_s^t = i\} = p_{ij}$

hold for the sequence $\{y_s^0, y_s^1 ...\}$, meaning that this is a stochastic process such that the probability p_{ij} of a random variable y being in the state j at any point of time $t+1$ depends only on the state i it has been in at point of time i. In other words, future developments during any transition period t to $t+1$ depend only on the value in t. Thus, the transition among classes can be described as:

$$F_y^{t+1} = P \cdot F_y^t, \tag{1}$$

where F_y denotes the firm profitability distribution at time t and $t+1$, respectively.

The discrete-time Markov chains allow tracing the development of firm behavior over time and examining intra-distribution mobility as well as persistence of firm profitability. Under this approach, transition probability matrices can be estimated, which provide useful information regarding persistence as they describe the probability that a firm switches from one profit class to another. To obtain valid estimates and reasonable transition probabilities, two important prerequisites must be met: (i) time invariance of the data-generating process and (ii) a sufficiently large number of observations. The latter imposes additional requirement on the formation of optimal bandwidth. Taking into account the structure of our data, it is reasonable to define five, equally sized groups so as to meet the requirements of the Markov process: (1) the least profitable firms; (2) low profitable firms; (3) profitable firms; (4) high profitable firms; and (5) the most profitable firms. Accordingly, the first and second groups comprise companies with low

[10] A similar technique is developed in Quah (1996), Bickenbach and Bode (2003), Cefis (2003) and Geppert and Stephan (2008).

profit rates, while the fourth and the fifth classes are firms that have above-average profit.

The transition probability matrices are estimated using the sample of firms for yearly transition periods (Tables 4 and 5 for PCM and ROA, respectively). In the case of strong profit persistency, all elements on the main diagonal should be close to 1. Thus, since the elements on the diagonal have values above 0.2, the results show a moderate persistence of profits. However, we find a stronger persistence in the low and high profit classes, where the transition probability is around 0.4 (Bickenbach and Bode 2003).

The so-called half-life coefficient is a useful tool for evaluating the mobility of firms across profit classes (Shorrocks 1978). The half-life coefficients suggest the speed of convergence toward the equilibrium distribution for a Markov chain with transition matrix P.[11] In our case, the half-life coefficients imply a relatively quick convergence: the equilibrium state will be achieved after two years.

It is useful to compare these results with predicted outcomes/probabilities conditioned on the determinants of profit. To this end, multinomial logit regressions are employed despite the ordinal scale of our dependent variable.[12] The reason for employing this technique is to obtain the predicted transition probabilities of inter-group movements (Tables 4 and 5 for PCM and ROA, respectively). The results corroborate the prior conclusions as the elements of the new transition matrix gather along the main diagonal. However, conditioned outcomes show a considerably higher level of persistence and a longer time of convergence for both measures of profitability (about five years for PCM and about three and half years for ROA). Taken together, our findings of a moderate level of persistence and a slow speed of adjustment to the steady-state value are in contrast to those of Glen and Singh (2003).

[11] Half-life measure: $h = \frac{-\log(2)}{\log|\lambda_2|}$, where λ_2 is the second largest eigenvalue of the transition matrix.

[12] The estimations of the multinomial regressions are available upon request.

4.1.2 Speed of Convergence: Robustness Check

The issue of profit persistence is usually analyzed as a time-series problem because in the structural model profit persistence is dominated by the impact of past profits (Goddard and Wilson (1999)). The majority of relevant studies implement the following empirical model:

$$\pi_{it} = \alpha_i + \lambda_i \pi_{i,t-1} + u_{it} \tag{2}$$

where π_{it} is normalized to the industry average profit of firm i in a given period t, α_i and λ_i denote the parameter of the lagged dependent variable, and u_{it} is i.i.d error term.

Empirical research is chiefly interested in the estimation of λ_i, as it indicates the speed of adjustment. If λ_i is close to 1 it means that there is slow adjustment or, in other words, a high persistence of profit in successive periods. However, if λ_i has a value close to 0, it suggests that the profit level in the previous period does not affect the profit level in the current period, hence indicating the absence of profit persistence. Goddard and Wilson (1999) summarize the most prominent studies in this field (Table 1). Mueller (1990), for instance, using a sample of U.S. corporations, finds that the speed of adjustment is about 0.18 on average, which is a low value and thus can be viewed as a deviation from the more usual trend. However, he states that the long-run profit rates differ significantly across firms and that the deviation of their profit above the norm appears to be quite stable for a remarkably high share of the firms (69 percent). Comparing the outcomes across advanced countries, the main conclusion of Glen and Singh (2003) is that the persistency of profit rate for developing countries is lower than that of companies in advanced countries.

To provide additional evidence on the persistence of profit in emerging markets we use the GMM-SYS estimation technique as an alternative to the commonly applied regression methods in profit persistence studies. The model is specified as:

$$\pi_{it} = \lambda \pi_{i,t-1} + x_{it}^{'} \beta + u_{it}, \quad i = 1, \ldots, N, \quad t = 1, \ldots, T \tag{3}$$

Table 1: Summary of profit persistence studies

Author	Country	Sample period	Observation per firm	Lambda
Mueller (1990)	US	1950-1972	23	0.183
Geroski and Jacquemin (1988)	UK	1947-1977	29	0.488
	France	1965-1982	18	0.412
	Germany	1961-1981	21	0.410
Cubbin and Geroski (1987)	UK	1948-1977	30	0.482
Odagiri and Yamavaki (1990)	Japan	1964-1982	19	0.465
Schohl (1990)	Germany	1961-1981	21	0.509
Waring (1996)	US	1970-1989	20	0.540
Glen and Singh (2003)	Emerging countries	1980-1994	10	0.01-0.42

Source: Goddard and Wilson (1999), except Glen and Singh (2003)

where x_{it} is a vector of exogenous regressors, $u_{it} = \mu_i + \nu_{it}$, μ_i is a fixed-effect, andν_{it} is a random disturbance.

We include the variables described in the previous section to control for important influences on the profit rate. The size of company, intangible assets, and liquidity are presumably the most influential determinants of profitability of firms in emerging markets. Ownership structure and regional dummies are expected to provide some further evidence on the peculiarities of a transition economy. Moreover, each equation includes the diversification, year, and industry dummy variables.

The econometric model is estimated using the two-step GMM–SYSTEM dynamic panel estimator, which is the preferred estimator in our case, as it, unlike the usual GMM estimator, uses not only transformed equations but also combines transformed equations with level equations (see Blundell and Bond (1998)). The models are estimated using the orthogonal transformation to remove individual firm effects. To check the validity of the instruments, we perform Hansen's test of overidentifying restrictions, which is asymptotically distributed as $\chi^2(k)$ where k denotes the number of overidentifying restrictions. Note that the GMM estimates are valid only if ν_{it} errors are serially

uncorrelated. Therefore, we present the test statistics for first-order and second-order serial correlation.[13]

Table 6 reports the estimated parameters of the determinants of profitability measured by PCM and ROA. All estimated coefficients are in line with our predictions. The main focus of our investigation is on the speed of profit adjustment which can be calculated from the estimated parameters on lagged profit rates. The estimated λ_i is 0.4146 and 0.6965 for ROA and PCM respectively (Table 6). These parameters enable the calculation of the half-life measure, which can be used as a further robustness check. We achieve results very similar to those obtained from the previous Markov chain technique. The implied time of convergence for PCM is a little bit longer (about six years) compared to the Markov chain result, while the adjustment time for ROA varies between the results for unconditional and conditional transition matrices of the Markov chain approach. Thus, the results of the dynamic panel data analysis regarding the persistence and speed of adjustment of profit do not agree with the results for emerging markets reported in Glen and Singh (2003).

The estimation results furthermore suggest that regional effects are important for explaining differences in profit rates (Table 6). Compared to firms located in the reference region (North-Center), firms located in the other Ukrainian regions have a significantly lower level of profitability. This finding is in accord with the results of Schnytzer and Andreyeva (2002), who report a permanent better performance of companies located in central regions of Ukraine. The estimation results for ownership structure support the view that individual ownership is positively associated with performance in Ukraine (Pivovarsky 2001). However, this appears to be true only for ROA, not for profitability in terms of PCM.

[13]We apply the Windmeijer (2005) finite sample correction using the XTABOND2 module of the STATA package. In case of GMM-SYS the matrix of instruments for all firms estimation includes $(Profitability)_{t-2}$ to $(Profitability)_{t-4}$, $(Size)_{t-1}$ to $(Size)_{t-3}$, $(Intangible\ Assets)_{t-1}$ to $(Intangible\ Assets)_{t-3}$, and $(Liquidity)_{t-1}$ to $(Liquidity)_{t-3}$, and $\Delta(Profitability)_{t-4}$, $\Delta(Size)_{t-3}$, $\Delta(Intangible\ Assets)_{t-3}$, and $\Delta(Liquidity)_{t-3}$. See help for XTABOND2 Roodman (2006) for matrix of instruments selection.

4.2 Determinants of Firm Profits

To study the determinants of profit in more detail, we perform quantile regression analyses (Koenker and Hallock 2001). For our purposes, estimation of linear models by quantile regressions is preferable over the usual regression methods for a number of reasons. First, quantile regression results are characteristically robust to outliers and heavy-tailed distributions (Buchinsky 1998). Second, the quantile regressions technique avoids the restrictive assumption that the error terms are identically distributed at all points of the conditional distribution. Avoiding this assumption allows us to capture firm heterogeneity in that the slope parameters can vary at different quantiles of the distribution of the dependent variable. An additional reason for using quantile regression methodology is if variables are skewed or not normally distributed. Note that the coefficients from quantile regression can be interpreted as a marginal change in regressand at the certain quantile due to marginal change in particular regressor (Yasar et al. 2006).

Tables 7 and 10 report the results from the quantile regressions for PCM and ROA, respectively. From these tables, we can observe, first, that the explanatory power of the models is higher for both the least and the most profitable firms. As expected, the outcomes for ROA demonstrate a positive significant association between profitability and size, which is consistent with theory and also a plausible finding for transition countries in particular. Tybout (2000), for example, points out that due to particular features of emerging markets, large firms have some advantages: (i) policies favor larger companies, while inhibiting growth among small firms, (ii) as a rule, large-scale producers are selected for special subsidies, (iii) banks view larger companies as relatively less risky and cheaper to service, and thus these companies are given preferential access to credit, (iv) protectionist trade policies are more likely to favor large firms, (v) and capital-intensive firms can lobby the government more vigorously.

A significant positive effect of firm size on PCM is found only for lower quantiles. The profitability of firms with average levels of PCM is not sensitive to firm size, while negative coefficients for size are obtained for their more profitable counterparts. This implies that the size of less profitable firms is of great importance for enhancing PCM.

However, more profitable firms try to reduce size so as to maintain a higher PCM. Apparently, this issue is related to the effective scale question, since the most profitable companies do not benefit from large size in achieving extra PCM and they are inclined to report higher levels of ROA. This issue is especially notable as large relatively unprofitable firms have a much better chance of surviving compared to profitable but smaller companies (Singh 2003).

Glen and Singh (2004) argue that emerging market companies have a higher level of fixed assets than their counterparts in advanced markets. This is an important statement, since high profit can be maintained only by sustained innovation (Mueller 1990). However, Galbreath and Galvin (2008) emphasize that tangible assets cannot be the source of permanent competitive advantage because they are observable factors and, thus, can be easily imitated by rivals, and that it is only reputation, patents, and other intangible assets that result in abnormal profit. Therefore, it is interesting to look at whether the share of intangible assets in the structure of total (or fixed assets) allows firms to obtain higher profit. Our results demonstrate that PCM is positively related to intangible assets, while there is no effect of this variable on ROA.

An interesting aspect of the profit persistence issue is companies' capability to smooth cash-flow shocks. To estimate this effect, we define the liquidity ratio, which characterizes firms' cash constraints.[14] Garner et al. (2002) note that volatility of cash flows influences the market value of firms. However, a positive and significant influence is obtained only at the 75 percent quantile for PCM.

Several studies stress the crucial impact of agency costs and related problems with corporate governance that ensue from unresolved ownership relations in Ukraine. For instance, Estrin and Rosevear (1999) argue that outsiders have no influence on firm performance in Ukraine due to the underdeveloped capital markets and the dispersed ownership structure. Schnytzer and Andreyeva (2002) find that ownership concentration improves the performance of Ukrainian companies. In contrast to these studies, our estimation provides evidence of a significant and robust negative impact of concentrated

[14]Konings et al. (2003) find a stronger persistence of soft budget constraints for firms in less developed countries.

ownership on profitability ratios despite poor protection of minority ownership rights and weak capital markets. However, this can be explained by cross-shareholding that leads to reallocation of firm resources to optimize joint benefits of companies within the business group. Khanna and Palepu (2000) point out that affiliated companies can face a situation of misallocation of capital when the cash flow generated by profitable firms within the group is invested in unprofitable ventures, even though this may not be in interest of minor shareholders. Moreover, Baum et al. (2008) demonstrate that Ukrainian banks with political affiliations operate with an objective function different from that of strict profit maximization. The influence of ownership structure on profit persistence is additionally examined by controlling for the type of main stakeholder.[15] As predicted, if the dominant shareholder is a private individual, there is better firm performance. The behavior of the most (least) profitable companies is totally different from the main group of firms in the case of PCM (ROA) as it is not sensitive to the impact of ownership structure.

To gain a deeper insight into the processes affecting the profit rates, we run quantile regressions for firm-specific averages (between-firm regressions)and for within-firm transformed variables (within-firm regressions). The results for within-firm quantile regressions are reported in8 and 11 for PCM and ROA, respectively. Tables 9 and 12 set out the outcomes for the between-firm quantile calculations, the most interesting of which is the positive significant coefficients for liquidity, a finding that confirms our previous hypothesis. The significant inverse relation between ROA and intangible assets for regressions based on within transformed variables is found for the firms with the lowest and the highest rates of profits. This result implies regardless of the fact that these firms have invested heavily in patents and licenses, they still perform poorly. Very similar results were found by Coad and Rao (2008). Finally, it should be mentioned that models based on firm-specific averages have more explanatory power and validate the principal tendencies described above for both measures of profit rate.

[15]In general, corporate owners are assumed to have lower cost of monitoring the firm's management because of greater expertise. Garner et al. (2002) note that the market value of a company is sensitive to the percentage of institutional ownership.

5 Conclusions

The aim of our paper is to provide evidence on the hypothesis put forward by Glen and Singh (2003) that the persistence of profit is lower in emerging markets compared to advanced ones. We use a panel data set on balance sheets and income statements of open joint stock Ukrainian companies during 1999–2006 in our analysis. The outcomes of the Markov chain analysis show evidence of a moderate or high level of profit persistence in Ukraine. This finding holds for both measures of profitability—price-cost margin and return on assets. Thus, our results cast doubt on Glen and Singh's (2003) hypothesis that competition is more intense in emerging markets compared to advanced economies.

To complement and further substantiate these findings, we use dynamic panel data techniques, enabling us to evaluate the speed of profit convergence in Ukraine. The estimates vary between 0.415 and 0.697 for return on assets and price-cost margin, respectively, implying a comparatively low speed (six years) of adjustment of profits to their steady-state value. Overall, the findings for Ukranian firms do not significantly differ from results that have been found in other empirical studies for firms in more advanced economies, which is a surprising outcome of our study.

Regarding the determinants of profit, one noteworthy result is the significant impact of ownership structure and regional location of firms. Firms located in the North-Center of Ukraine have, c.p., a higher profitability than firms located in other regions. An unexpected negative relationship between profit and ownership concentration appears to be related to the misallocation of financial resources within business groups (Khanna and Palepu 2000) and to the effect of different objective functions for profit maximization of Ukrainian firms (Baum et al. 2008). However, the ownership concentration exerts a direct influence on profit if the blocking share belongs to a private individual, a finding that is in agreement with Estrin and Wright (1999).

Taking into account firm heterogeneity, it is worth noting the varying impact of profit determinants at the high and low ends of the profit distribution. The results of the quantile regressions indicate that cross-shareholding and agency issues play a role for explaining profit in emerging markets.

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Table 2: Descriptive Statistics: Profit Rates across Industries

		PCM		ROA	
Industry	N	μ	σ	μ	σ
Mining	2,759	0.285	0.164	-0.005	0.124
Food	2,362	0.278	0.123	0.008	0.147
Textile	1,170	0.269	0.140	0.003	0.162
Wood Processing	518	0.288	0.144	0.012	0.112
Chemicals and Oil Chemicals	840	0.290	0.132	0.016	0.170
Consturction Materials	2,557	0.270	0.139	-0.008	0.098
Metallurgy	721	0.298	0.149	-0.007	0.077
Electronic Tools	675	0.287	0.148	0.009	0.111
Machinery	417	0.259	0.129	-0.010	0.120
Processing	2,012	0.287	0.145	-0.011	0.139
Energy	3,549	0.335	0.165	-0.013	0.153
Construction	2,124	0.252	0.149	-0.053	0.632
Transport	144	0.332	0.168	0.006	0.224

Note: Price-cost margin variable (PCM) is defined as sales minus cost divided by sales. Return on Assets (ROA) is constructed as EBIT to assets ratio.

Table 3: Descriptive Statistics

Variable	*Formula*	N	μ	σ
$Price - Cost\ Margin$	$\frac{S_{it}-C_{it}}{S_{it}}$	19,848	0.288	0.150
Return on Assets	$\frac{EBIT_{it}}{TA_{it}}$	19,848	-0.009	0.244
Size	$log(S_{it})$	19,848	8.039	2.035
Liquidity	$\frac{CA_{it}}{CL_{it}}$	19,848	4.433	50.972
Leverage	$\frac{LTD_{it}+STD_{it}}{TA_{it}}$	19,848	0.345	0.360
Intangible Assets	$\frac{IA_{it}}{TA_{it}}$	19,848	0.007	0.035

Note: Price-cost margin variable (PCM) is defined as sales minus cost divided by sales. Return on Assets (ROA) is constructed as EBIT to assets ratio. *Size* is measured by logarithm of sales. *Liquidity* is defined as the current assets to current liabilities ratio. *Leverage* is the firm's debt to total assets ratio. *Intangible Assets* is calculated as a share of intangible assets in total assets.

Table 4: Transition Probability Matrices: Result for PCM

Transition Probabilities*						
	(1)	(2)	(3)	(4)	(5)	P_i
(1)	0.399	0.213	0.145	0.120	0.123	0.200
(2)	0.233	0.328	0.200	0.133	0.105	0.200
(3)	0.150	0.227	0.296	0.197	0.130	0.200
(4)	0.110	0.124	0.230	0.346	0.190	0.200
(5)	0.109	0.108	0.128	0.203	0.451	0.200
P_j	0.207	0.193	0.186	0.196	0.217	1.000
Transition Probabilities**						
	(1)	(2)	(3)	(4)	(5)	P_i
(1)	0.555	0.262	0.080	0.081	0.022	0.200
(2)	0.231	0.431	0.216	0.106	0.016	0.200
(3)	0.104	0.269	0.342	0.211	0.075	0.200
(4)	0.033	0.104	0.265	0.423	0.176	0.200
(5)	0.037	0.050	0.091	0.213	0.609	0.200
P_j	0.207	0.193	0.186	0.196	0.217	1.000

Note:
P_i - initial probabilities.
P_j - destination probabilities.
* - unconditional probability.
** - conditional probability.
(1) the least profitable firms; (2) low profitable firms; (3) profitable firms; (4) highly profitable firms; (5) the most profitable firms.

Table 5: Transition Probability Matrices: Result for ROA

Transition Probabilities*						
	(1)	(2)	(3)	(4)	(5)	P_i
(1)	0.370	0.216	0.150	0.136	0.127	0.200
(2)	0.234	0.289	0.216	0.155	0.106	0.200
(3)	0.153	0.234	0.281	0.222	0.110	0.200
(4)	0.122	0.162	0.238	0.280	0.198	0.200
(5)	0.121	0.099	0.115	0.206	0.459	0.200
P_j	0.207	0.191	0.189	0.189	0.225	1.000
Transition Probabilities**						
	(1)	(2)	(3)	(4)	(5)	P_i
(1)	0.500	0.222	0.103	0.091	0.083	0.200
(2)	0.252	0.362	0.201	0.115	0.070	0.200
(3)	0.126	0.223	0.348	0.233	0.070	0.200
(4)	0.067	0.128	0.271	0.359	0.175	0.200
(5)	0.057	0.049	0.066	0.213	0.615	0.200
P_j	0.207	0.191	0.189	0.189	0.225	1.000

Note:
P_i - initial probabilities.
P_j - destination probabilities.
* - unconditional probability.
** - conditional probability.
(1) the least profitable firms; (2) low profitable firms; (3) profitable firms; (4) highly profitable firms; (5) the most profitable firms.

Table 6: Determinants of Profit

Dependent Variable: $Profit\ rate_{it}$

	(PCM)	(ROA)
$Profitability_{it-1}$	0.6965***	0.4146***
	(0.0659)	(0.1353)
$Size_{it}$	-0.0067***	0.0168**
	(0.0025)	(0.0066)
$Intangible\ Assets_{it}$	0.1179	0.0020
	(0.2430)	(0.2075)
$Liquidity_{it}$	0.0001	0.0008*
	(0.0002)	(0.0005)
$Leverage_{it}$	0.0130	0.0396
	(0.0131)	(0.0348)
$Owncon_{it}$	-0.0084	-0.0275
	(0.0167)	(0.0234)
$Owner_{it}$	-0.0019	0.0248**
	(0.0075)	(0.0112)
$South - Center$	-0.0084	-0.0139**
	(0.0052)	(0.0056)
$Northeast$	-0.0127***	-0.0089**
	(0.0040)	(0.0041)
$Southeast$	-0.0089**	-0.0163***
	(0.0044)	(0.0054)
$West$	-0.0058	-0.0002
	(0.0041)	(0.0045)
$South$	-0.0068	-0.0044
	(0.0049)	(0.0047)
AR(1)	-8.61***	-4.70***
AR(2)	1.76*	2.07**
Hansen	112.51	22.77
N	12,166	12,166

Note: Price-cost margin variable (PCM) is defined as sales minus cost divided by sales. Return on Assets (ROA) is constructed as EBIT to total assets ratio. *Size* is measured by logarithm of sales. *Intangible Assets* is calculated as a share of intangible assets in total assets. *Liquidity* is defined as the current assets to current liabilities ratio. *Leverage* is the firm's debt to total assets ratio. *Owncon* is a dummy variable that takes value of one if the firm has concentrated ownership structure. *Owner* is a dummy variable which equals one if dominant shareholder is an individual.

Each equation includes year, industry, and diversification dummy variables. Reference category for regional effects is North-Center. Asymptotic robust standard errors are reported in the brackets. Estimation using XTABOND2 module for STATA. "Sargan" is a Sargan–Hansen test of overidentifying restrictions (χ^2 value reported). "AR(k)" is the test for k-th order autoregression. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: Determinants of Corporate Profit

Dependent Variable: PCM_{it}

PCM	(q10)	(q25)	(q50)	(q75)	(q90)
$Size_{it}$	0.0130***	0.0089***	0.0011	-0.0086***	-0.0160***
	(0.0008)	(0.0007)	(0.0009)	(0.0012)	(0.0022)
$Intangible\ Assets_{it}$	0.0813**	0.0777*	0.0735**	0.0853*	0.0332
	(0.0328)	(0.0435)	(0.0375)	(0.0475)	(0.1117)
$Liquidity_{it}$	0.0000	0.0001	0.0001	0.0003*	0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0002)
$Leverage_{it}$	-0.0510***	-0.0566***	-0.0491***	-0.0290***	0.0010
	(0.0047)	(0.0025)	(0.0054)	(0.0074)	(0.0102)
$Owncon_{it}$	-0.0091**	-0.0071*	-0.0073*	0.0010	-0.0024
	(0.0038)	(0.0042)	(0.0039)	(0.0047)	(0.0080)
$Owner_{it}$	0.0159***	0.0129***	0.0124***	0.0076*	0.0064
	(0.0039)	(0.0029)	(0.0028)	(0.0043)	(0.0079)
$South - Center$	-0.0109*	-0.0042	-0.0001	0.0064	-0.0044
	(0.0058)	(0.0044)	(0.0041)	(0.0067)	(0.0092)
$Northeast$	-0.0122**	-0.0123***	-0.0084**	-0.0041	-0.0097
	(0.0048)	(0.0037)	(0.0039)	(0.0049)	(0.0094)
$Southeast$	-0.0097*	-0.0057	0.0027	0.0045	-0.0060
	(0.0055)	(0.0039)	(0.0037)	(0.0044)	(0.0059)
$West$	-0.0061**	-0.0073**	-0.0082**	-0.0062*	-0.0200*
	(0.0027)	(0.0034)	(0.0036)	(0.0036)	(0.0106)
$South$	-0.0155***	-0.0110***	-0.0042	0.0048	0.0262***
	(0.0047)	(0.0031)	(0.0032)	(0.0033)	(0.0076)
$pseudo - R^2$	0.0624	0.0359	0.0245	0.0269	0.0467
N	19,848				

Note: Price-cost margin variable (PCM) is defined as sales minus cost divided by sales. *Size* is measured by logarithm of sales. *Intangible Assets* is calculated as a share of intangible assets in total assets. *Liquidity* is defined as the current assets to current liabilities ratio. *Leverage* is the firm's debt to total assets ratio. *Owncon* is a dummy variable that takes value of one if the firm has concentrated ownership structure. *Owner* is a dummy variable which equals one if dominant shareholder is an individual. Each equation includes year, industry, and diversification dummy variables. Reference category for regional effects is North-Center. Standard errors are reported in the parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8: Determinants of Corporate Profit: Result for Within Transformed Variables

Dependent Variable: PCM_{it}

PCM	(q10)	(q25)	(q50)	(q75)	(q90)
$Size_{it}$	0.0083***	0.0030**	-0.0039***	-0.0093***	-0.0233***
	(0.0025)	(0.0014)	(0.0014)	(0.0022)	(0.0030)
$Intangible\ Assets_{it}$	0.0589	0.0033	-0.0488	-0.0628	-0.1583
	(0.0990)	(0.0530)	(0.0403)	(0.1007)	(0.1618)
$Liquidity_{it}$	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0000)
$Leverage_{it}$	-0.0561***	-0.0521***	-0.0427***	-0.0323***	-0.0173
	(0.0070)	(0.0042)	(0.0038)	(0.0041)	(0.0126)
$Owncon_{it}$	-0.0024	-0.0085**	-0.0000	-0.0027	-0.0071
	(0.0071)	(0.0033)	(0.0006)	(0.0030)	(0.0062)
$Owner_{it}$	0.0021	0.0019	0.0000	0.0033	0.0101**
	(0.0042)	(0.0023)	(0.0005)	(0.0020)	(0.0050)
$pseudo - R^2$	0.0079	0.0057	0.0065	0.0114	0.0192
N	19,848				

Note: Price-cost margin variable (PCM) is defined as sales minus cost divided by sales. *Size* is measured by logarithm of sales. *Intangible Assets* is calculated as a share of intangible assets in total assets. *Liquidity* is defined as the current assets to current liabilities ratio. *Leverage* is the firm's debt to total assets ratio. *Owncon* is a dummy variable that takes value of one if the firm has concentrated ownership structure. *Owner* is a dummy variable which equals one if dominant shareholder is an individual.
Each equation includes year, industry, and diversification dummy variables. Standard errors are reported in the parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 9: Determinants of Corporate Profit: Result for Between Transformed Variables

Dependent Variable: PCM_{it}

PCM	(q10)	(q25)	(q50)	(q75)	(q90)
$Size_{it}$	0.0079***	0.0065***	0.0007	-0.0041***	-0.0113***
	(0.0007)	(0.0006)	(0.0006)	(0.0006)	(0.0014)
$Intangible\ Assets_{it}$	0.1100***	0.1605***	0.1247***	0.1380***	0.1298
	(0.0253)	(0.0317)	(0.0355)	(0.0417)	(0.0996)
$Liquidity_{it}$	0.0000	0.0002**	0.0002*	0.0004***	0.0010**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0005)
$Leverage_{it}$	-0.0355***	-0.0476***	-0.0340***	-0.0283***	-0.0082
	(0.0042)	(0.0033)	(0.0042)	(0.0056)	(0.0092)
$Owncon_{it}$	-0.0022	-0.0028	0.0006	-0.0022	0.0024
	(0.0025)	(0.0027)	(0.0025)	(0.0036)	(0.0042)
$Owner_{it}$	0.0115***	0.0105***	0.0064***	0.0036	-0.0013
	(0.0021)	(0.0018)	(0.0019)	(0.0024)	(0.0046)
$South - Center$	-0.0049	-0.0064**	0.0017	-0.0001	-0.0081
	(0.0042)	(0.0031)	(0.0033)	(0.0042)	(0.0054)
$Northeast$	-0.0026	-0.0099***	-0.0090***	-0.0058*	-0.0124***
	(0.0025)	(0.0027)	(0.0030)	(0.0033)	(0.0037)
$Southeast$	-0.0174***	-0.0063***	0.0054**	0.0084**	0.0020
	(0.0038)	(0.0022)	(0.0024)	(0.0035)	(0.0049)
$West$	-0.0037	-0.0078**	-0.0092***	-0.0059**	-0.0230***
	(0.0033)	(0.0032)	(0.0028)	(0.0025)	(0.0045)
$South$	-0.0042	-0.0094***	-0.0097***	0.0034	0.0194**
	(0.0029)	(0.0027)	(0.0026)	(0.0049)	(0.0088)
$pseudo - R^2$	0.0633	0.0474	0.0346	0.0450	0.0672
N	19,848				

Note: Price-cost margin variable (PCM) is defined as sales minus cost divided by sales. *Size* is measured by logarithm of sales. *Intangible Assets* is calculated as a share of intangible assets in total assets. *Liquidity* is defined as the current assets to current liabilities ratio. *Leverage* is the firm's debt to total assets ratio. *Owncon* is a dummy variable that takes value of one if the firm has concentrated ownership structure. *Owner* is a dummy variable which equals one if dominant shareholder is an individual. Each equation includes year, industry, and diversification dummy variables. Reference category for regional effects is North-Center. Standard errors are reported in the parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10: Determinants of Corporate Profit

Dependent Variable: ROA_{it}

ROA	(q10)	(q25)	(q50)	(q75)	(q90)
$Size_{it}$	0.0200***	0.0171***	0.0147***	0.0177***	0.0233***
	(0.0008)	(0.0005)	(0.0003)	(0.0005)	(0.0008)
$Intangible\ Assets_{it}$	0.0085	-0.0103	0.0073	0.0144	0.0318
	(0.0138)	(0.0179)	(0.0163)	(0.0275)	(0.0374)
$Liquidity_{it}$	0.0000	0.0000	0.0000	0.0001	0.0002
	(0.0000)	(0.0000)	(0.0000)	(0.0002)	(0.0002)
$Leverage_{it}$	-0.1991***	-0.1213***	-0.0602***	-0.0446***	-0.0326**
	(0.0102)	(0.0061)	(0.0037)	(0.0048)	(0.0133)
$Owncon_{it}$	0.0023	-0.0074***	-0.0115***	-0.0163***	-0.0236***
	(0.0035)	(0.0016)	(0.0021)	(0.0032)	(0.0061)
$Owner_{it}$	0.0001	0.0085***	0.0121***	0.0183***	0.0230***
	(0.0031)	(0.0016)	(0.0014)	(0.0025)	(0.0049)
$South - Center$	-0.0058	-0.0082***	-0.0048**	-0.0063***	-0.0009
	(0.0039)	(0.0018)	(0.0019)	(0.0019)	(0.0076)
$Northeast$	-0.0093***	-0.0072***	-0.0020	-0.0052**	-0.0071*
	(0.0025)	(0.0023)	(0.0015)	(0.0023)	(0.0037)
$Southeast$	-0.0108***	-0.0136***	-0.0112***	-0.0148***	-0.0246***
	(0.0041)	(0.0027)	(0.0020)	(0.0021)	(0.0032)
$West$	-0.0027	-0.0031	-0.0029	-0.0012	-0.0034
	(0.0034)	(0.0023)	(0.0019)	(0.0020)	(0.0031)
$South$	-0.0114**	-0.0086***	-0.0047**	-0.0040*	0.0047
	(0.0045)	(0.0022)	(0.0018)	(0.0022)	(0.0068)
$pseudo - R^2$	0.1519	0.1039	0.0759	0.0862	0.0957
N	19,848				

Note: Return on Assets (ROA) is constructed as EBIT to assets ratio. *Size* is measured by logarithm of sales. *Intangible Assets* is calculated as a share of intangible assets in total assets. *Liquidity* is defined as the current assets to current liabilities ratio. *Leverage* is the firm's debt to total assets ratio. *Owncon* is a dummy variable that takes value of one if the firm has concentrated ownership structure. *Owner* is a dummy variable which equals one if dominant shareholder is an individual.
Each equation includes year, industry, and diversification dummy variables. Reference category for regional effects is North-Center. Standard errors are reported in the parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 11: Determinants of Corporate Profit: Result for Within Transformed Variables

Dependent Variable: ROA_{it}

ROA	(q10)	(q25)	(q50)	(q75)	(q90)
$Size_{it}$	0.0327***	0.0281***	0.0226***	0.0251***	0.0270***
	(0.0018)	(0.0012)	(0.0010)	(0.0013)	(0.0022)
$Intangible\ Assets_{it}$	-0.1811**	-0.0435	-0.0077	-0.0122	-0.1343*
	(0.0808)	(0.0365)	(0.0232)	(0.0280)	(0.0728)
$Liquidity_{it}$	0.0000**	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$Leverage_{it}$	-0.1920***	-0.1463***	-0.1233***	-0.1357***	-0.1690***
	(0.0185)	(0.0125)	(0.0079)	(0.0101)	(0.0142)
$Owncon_{it}$	-0.0000	-0.0020	0.0020*	0.0027*	-0.0001
	(0.0044)	(0.0017)	(0.0010)	(0.0014)	(0.0046)
$Owner_{it}$	-0.0030	-0.0014	0.0001	0.0016	0.0022
	(0.0032)	(0.0014)	(0.0008)	(0.0012)	(0.0033)
$pseudo - R^2$	0.0680	0.0554	0.0465	0.0510	0.0527
N	19,848				

Note: Return on Assets (ROA) is constructed as EBIT to assets ratio. *Size* is measured by logarithm of sales. *Intangible Assets* is calculated as a share of intangible assets in total assets. *Liquidity* is defined as the current assets to current liabilities ratio. *Leverage* is the firm's debt to total assets ratio. *Owncon* is a dummy variable that takes value of one if the firm has concentrated ownership structure. *Owner* is a dummy variable which equals one if dominant shareholder is an individual.
Each equation includes year, industry, and diversification dummy variables. Standard errors are reported in the parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 12: Determinants of Corporate Profit: Result for Between Transformed Variables

Dependent Variable: ROA_{it}

ROA	(q10)	(q25)	(q50)	(q75)	(q90)
$Size_{it}$	0.0190***	0.0158***	0.0153***	0.0185***	0.0219***
	(0.0005)	(0.0003)	(0.0005)	(0.0003)	(0.0004)
$Intangible\ Assets_{it}$	0.0110	-0.0297***	-0.0098	-0.0284	0.1026***
	(0.0156)	(0.0101)	(0.0157)	(0.0285)	(0.0272)
$Liquidity_{it}$	0.0001	0.0001***	0.0001	0.0002	0.0005**
	(0.0000)	(0.0000)	(0.0001)	(0.0002)	(0.0002)
$Leverage_{it}$	-0.1344***	-0.0908***	-0.0632***	-0.0524***	-0.0368***
	(0.0051)	(0.0021)	(0.0027)	(0.0044)	(0.0076)
$Owncon_{it}$	-0.0039	-0.0053***	-0.0088***	-0.0147***	-0.0247***
	(0.0024)	(0.0018)	(0.0014)	(0.0019)	(0.0034)
$Owner_{it}$	0.0090***	0.0079***	0.0105***	0.0138***	0.0179***
	(0.0018)	(0.0012)	(0.0014)	(0.0014)	(0.0026)
$South - Center$	-0.0076***	-0.0080***	-0.0027	-0.0055***	-0.0043
	(0.0027)	(0.0023)	(0.0018)	(0.0021)	(0.0036)
$Northeast$	-0.0055*	-0.0042***	-0.0055***	-0.0053***	-0.0152***
	(0.0033)	(0.0016)	(0.0016)	(0.0019)	(0.0036)
$Southeast$	-0.0139***	-0.0111***	-0.0127***	-0.0169***	-0.0249***
	(0.0020)	(0.0010)	(0.0015)	(0.0015)	(0.0036)
$West$	-0.0052*	-0.0035**	0.0007	0.0023	-0.0079***
	(0.0027)	(0.0017)	(0.0015)	(0.0021)	(0.0029)
$South$	-0.0117***	-0.0113***	-0.0051***	-0.0021	-0.0064**
	(0.0024)	(0.0024)	(0.0014)	(0.0019)	(0.0029)
$pseudo - R^2$	0.1714	0.1418	0.1183	0.1268	0.1423
N	19,848				

Note: Return on Assets (ROA) is constructed as EBIT to assets ratio. *Size* is measured by logarithm of sales. *Intangible Assets* is calculated as a share of intangible assets in total assets. *Liquidity* is defined as the current assets to current liabilities ratio. *Leverage* is the firm's debt to total assets ratio. *Owncon* is a dummy variable that takes value of one if the firm has concentrated ownership structure. *Owner* is a dummy variable which equals one if dominant shareholder is an individual.
Each equation includes year, industry, and diversification dummy variables. Reference category for regional effects is North-Center. Standard errors are reported in the parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.